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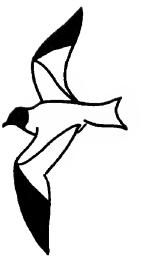

NOTES ON BIRDS KILLED IN THE 1971 SAN FRANCISCO OIL SPILL

John Smail, David G. Ainley and Helen Strong

On 18 January 1971 two tankers collided in the mouth of San Francisco Bay and 840,000 gallons of bunker C fuel oil were spilled. Tides and currents quickly moved most of the oil out of the Bay, and in the following several days it spread 17 km out into the Pacific Ocean and along the coast from Drake's Bay on the Point Reyes National Seashore southward almost to Point Año Nuevo. The oil thus covered a sizable portion of one of the most important wintering areas for aquatic birds on the west coast of North America.

This paper summarizes bird mortality resulting from the oil and presents information gained from inspecting over 1100 bird carcasses.

METHODS

It was not possible to have birds counted by experieneed observers at all of the three dozen cleaning stations that handled oiled birds. From counts made at various times we were able to establish the bird loss at nine stations. At three of the major stations - Bolinas, Pacifica (Linda Mar), and Tiburon - and on Southeast Farallon Island counts were established at the outset and maintained throughout the operation. Data from those four stations were used to compare the relative degrees that different species were affected.

The bodies of over 1100 birds were inspected from those stored at the San Francisco Zoo. On about 600 of these, measurements of the flattened wing were made to the nearest millimeter with a rule having a flange at the zero end. Other measurements were made with dial calipers to the nearest 0.5 mm. Bill depth was measured at the anterior edge of the nares, and other measurements were done according to the methods of Storer (1952). Birds were sexed by inspection of gonads. When possible ages were determined from measurements and characteristics of plumage and bill. The color phases of Western Grebes were noted according to the following criteria (Storer, 1965). In dark phase birds the bill is greenish-yellow and the black of the crown extends to the eyes and to the gape; and in light phase birds the bill is orange-yellow and the black of the crown reaches neither the eyes nor the gape. In addition the back of light phase individuals is noticeably paler.

MORTALITY

Oiled birds were found on beaches from Tomales Bay to Santa Cruz (Figure 1). A mortality of 7000 birds was estimated by the California Department of Fish and Game and was quoted by them to the news media (R. Lassen, pers. comm.), but the basis for their calculation has not been disclosed. During our counts at eight cleaning stations and Southeast Farallon Island we tallied the arrival of 4629 oiled birds. The tally was as follows: on 20 January 211 birds were processed at Alameda Naval Air Station, 109 at the Family Dog Ballroom (San Francisco), 274 at Richmond, 320 at the Humane Society in Novato; 19 to 26 January, 1148 at Bolinas Marine Station; 19 to 27 January, 924 at Tiburon; 19 January to 1 February, 186 at Southeast Farallon Island; and 19 January to 2 February, 1432 at Pacifica (Linda Mar). Considering the stations from which we did not obtain figures (e.g., Santa Cruz, etc.) and the days we did not make counts at others, we estimate that at least 6000 birds passed through cleaning stations.

Certainly, other dead birds were disposed of without being taken to cleaning stations. Reviews of data for other spills and bird disasters indicate that at best a quarter and more probably only an eighth of the affected birds arrive on the beach dead or alive. The remainder wash out to sea or sink (Bourne, 1968; 1970). Based on this information a minimum mortality of 20,000 birds would not be unreasonable. In any case, bird loss resulting from the San Francisco

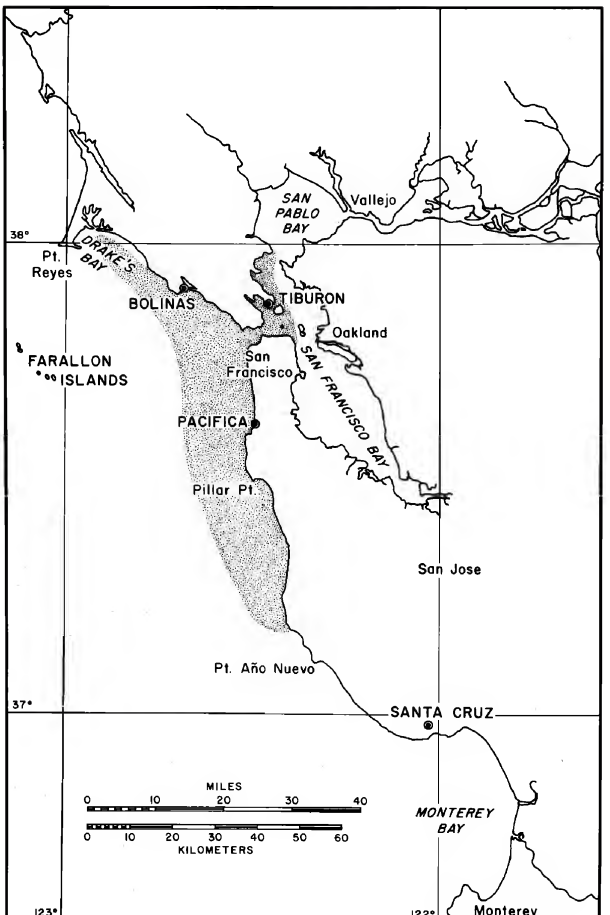

FIGURE 1. The distribution of oil slicks (shown in hatchings) in central California coastal waters resulting from the 18 January 1971 oil spill.

oil spill was much greater than that at Santa Barbara in 1969, which was put at 3686 (1969, unpubl. report by California Department of Fish and Game). Mortality from the San Francisco spill was therefore similar to that in the well publicized *Torrey Canyon* spill of 1967 in the English Channel. In that spill 8000 birds were found for cleaning and a mortality of 40,000 to 100,000 birds was estimated (Bourne, 1968, 1970).

In the San Francisco spill the heaviest losses (Table 1) were suffered by Western Grebes *(Aechmophorus occidentalis),* Surf and White-winged Scoters *(Melanitta perspicillata* and *M. deglandi),* and Common Murres *(Uria aalge).* The pattern of loss is consistent with Bourne's (1968) observation that for the species present at the time of the disaster, those best adapted to an aquatic existence and most poorly adapted to land, and even flight, are affected most by oil pollution. These species almost never come to land during the winter. Another pattern evident in the San Francisco spill was that species that spend the night on the water were worst hit. Many more grebes and murres were oiled than were cormorants *(Phalacrocorax* spp.) and gulls *(Larus* spp.) even though the latter two groups were using the affected ocean areas just as heavily in January (PRBO unpubl. data). Cormorants, although as awkward on land as murres and grebes, roost at night on rocks, cliff ledges, and buoys because their plumage becomes waterlogged after a couple of hours in the water (Rijke, 1968). During daylight cormorants and gulls, which also roost at night on land, were apparently able to detect and avoid oil (Bourne, 1968; Straughan, 1971), but species resting on the water during the night were taken unawares.

MEASUREMENTS

Table 2 summarizes data taken for three species available in sufficient numbers for analysis. Measurements of murres in breeding plumage fell within the range given by Storer (1952) for the race *U. a. californica.* They must have originated from the Farallon Islands and the two breeding colonies near Point Reyes. Murres in winter plumage were in the size range for immatures of the race *U. a. inornata* originating from British Columbia and Washington, although a few of the smaller individuals in this group may have been *californica* immatures (Storer, 1952; pers. comm.). Since none of the birds in winter plumage had the ridges and thickenings of the upper mandible that are characteristic of the adult bill (Storer, 1952;

Table 1. Birds received at the four cleaning/receiving stations that were censused throughout the operation.

SPECIES	STATION				TOTAL	GROUP % OF TOT.
	Bolinas	Farallon Is.	Tiburon	Pacifica		
Common Loon	10		9	9	28	3
Arctic Loon	8		13		21	
Red-throated Loon	38		9	17	64	
Loon spp.			1		1	
Western Grebe	797	1	555	702	2055	57
Red-necked Grebe	2					
Horned Grebe	24		11	9	57	
Eared Grebe			13			
Pied-billed Grebe	1				1	
Double-crested and Brandt's Cormorant	6		12	3	21	1
Pelagic Cormorant	2				2	
Pintail			1		1	1
Canvasback	2		6		8	
Ring-necked Duck			3		3	
Scaup spp.	3		4		7	
Goldeneye spp.	2		4		6	
Bufflehead	1		6		7	
Duck spp.	12		3		15	
Common Scoter			10		10	20
White-winged Scoter	69	1	77	380	716	
Surf Scoter	69		120			
Scoter spp.	7		4		11	
Ruddy Duck	14		24	3	41	1
Red-breasted Merganser	4		2		6	
American Coot			20	1	21	1
Willet	1				1	1
Sanderling			1		1	
Glaucous-winged Gull			2	1	3	1
Herring Gull	1				1	
Western Gull	2		2		4	
California Gull	2				2	
Ring-billed Gull	1				1	
Mew Gull	2		1		3	
Gull spp.	2		1	3	6	
Common Murre	68	184	10	302	564	15
Rhinoceros Auklet				2	2	
	1148	186	924	1432	3690	

Table 2. Analysis of measurements (in mm.) taken on three species. Bill length is length of the exposed culmen; bill depth is at the anterior edge of the nares; and wing is length of the flattened wing. The last two columns give, respectively, the probabilities that differences in means are due to chance between males (♂) and females (♀), and for murres, between birds in breeding (B) and winter plumage (W). V is the coefficient of variation.

MEASUREMENT	SEX	N	RANGE	MEAN	SE	SD	V	P(♂-♀)	P(B-W)
COMMON MURRE ADULTS IN BREEDING PLUMAGE									
Bill length	♂	48	45.0-54.0	49.3	0.30	2.08	4.21	$P<0.001$	$P>0.6$
	♀	46	42.0-50.0	47.2	0.28	1.92	4.06		$P>0.5$
Bill depth	♂	48	13.0-15.5	14.9	0.09	0.63	4.26	$P<0.01$	$P<0.001$
	♀	46	13.0-15.5	14.5	0.09	0.63	4.34		$P<0.001$
Tarsus	♂	28	38.0-42.0	39.9	0.19	1.05	2.63	$P>0.2$	$P>0.4$
	♀	26	38.0-41.0	39.6	0.19	0.97	2.45		$P>0.3$
Wing	♂	34	202-220	208	0.99	5.78	2.78	$P>0.4$	$P<0.01$
	♀	37	200-221	209	0.76	4.71	2.25		$P<0.001$
COMMON MURRE IMMATURES IN WINTER PLUMAGE									
Bill length	♂	100	44.0-53.0	48.7	0.20	2.03	4.16	$P<0.001$	
	♀	98	43.0-52.0	47.4	0.18	1.81	3.81		
Bill depth	♂	100	12.0-15.0	13.2	0.08	0.76	5.76	$P<0.01$	
	♀	98	12.0-15.0	12.9	0.07	0.69	5.35		
Tarsus	♂	63	37.0-43.0	40.1	0.16	1.24	3.09	$P>0.1$	
	♀	67	37.0-41.0	39.4	0.12	0.95	2.41		
Wing	♂	82	195-220	205	0.60	5.44	2.65	$P>0.2$	
	♀	82	194-219	204	0.57	5.19	2.54		
RED-THROATED LOON									
Bill length	♂	12	52.0-57.0	54.6	0.66	2.27	4.15	$P<0.001$	
	♀	23	48.0-55.0	51.4	0.53	2.53	4.92		
Bill depth	♂	12	11.0-13.5	12.2	0.21	0.73	5.98	$P<0.001$	
	♀	23	9.5-12.0	10.6	0.12	0.58	5.47		
Wing	♂	12	278-294	286	1.71	5.92	2.07	$P<0.001$	
	♀	23	264-285	275	1.56	7.45	2.71		
WESTERN GREBE									
Bill length	♂	56	67.0-80.0	73.4	0.46	3.48	4.74	$P<0.001$	
	♀	48	58.0-71.0	64.2	0.43	3.00	4.67		
Bill depth	♂	56	9.5-13.0	11.7	1.04	0.78	6.66	$P<0.001$	
	♀	48	8.0-11.0	9.3	1.00	0.69	7.41		
Wing	♂	56	192-214	202	0.90	6.75	3.34	$P<0.001$	
	♀	48	184-203	191	0.98	6.80	3.56		

Ainley, pers. obs.) we concluded that there were no *inornata* adults in our sample. This indicates that *U. a. inornata* adults winter farther north closer to their breeding colonies. Individuals in breeding plumage had larger gonads than those in winter plumage.

There is a ratio of 198 *inornata* birds to 94 *californica* in our sample but this is not a true measure of the subspecific composition of the Common Murres off the central California coast in winter. During the time of the spill most but not all the murres that breed on the Farallon Islands spent the nights on the breeding ledges. This they typically do on many nights in January. The *inornata* individuals, all of which spend the night on the water on their wintering grounds, were more susceptible to oiling.

There are no studies of geographic anatomical variation in the Red-throated Loon *(Gavia stellata)* nor in the Western Grebe (Palmer, 1962). Thus we were not able to determine the area of origin for these common California birds. We present our measurements in the event of future studies on geographic variation and to characterize the populations of these species wintering in central California waters. Storer (1965) suggested that the ratio of light to dark phase Western Grebes could vary geographically and, thus, ratios might be used to determine the breeding range of winter populations. But with data only now being accumulated on color phase ratios in breeding populations, it is not yet possible to use this method. Of 487 grebes we inspected, only 50, or 10 percent, were of the light phase. Interestingly, of the Western Grebes collected during the winter in central California coastal waters that were inspected by Dr. Storer in museum collections, 50 percent were light phase. Comparison of this ratio with that which we obtained suggests that museum collectors have selected light phase birds to a degree disproportionate to their occurrence in nature probably because light phase birds appear brighter and cleaner than dark ones. Dr. Storer pointed out this difficulty in working with museum grebe collections. Determinations of color phase ratios in populations at their breeding areas are needed.

We determined sex ratios for five affected species: Red-throated Loon, 11 ♂♂, 23 ♀♀; Western Grebe, 420 ♂♂, 299 ♀♀; White-winged Scoter, 25 ♂♂, 27 ♀♀; Surf Scoter, 35 ♂♂, 22 ♀♀; Common Murre *(californica)*, 57 ♂♂, 50 ♀♀; and Common Murre *(inornata)*, 115 ♂♂, 102 ♀♀. In no species did the ratio differ significantly from a 1:1 ratio ($P > 0.05$; X^2 test). Although some of the samples were small it appears that the sexes in these species did not suffer differential

mortality. The data also suggest that both sexes of these species winter in equal proportions in central California waters.

In presenting estimates of birds killed and observations on dead birds we should point out that it will be impossible to determine how populations as a whole are affected in incidents of this kind on the west coast until much more research is done on the status and population sizes of our west coast aquatic birds. The San Francisco oil spill clearly underlined the lack of and need for this kind of information.

ACKNOWLEDGEMENTS

We wish to thank others on the staff and volunteers of Point Reyes Bird Observatory for their assistance in collecting data, especially J. Winter, T. J. Lewis, R. M. Stewart, B. Clow, and R. Scheible. We appreciate that the San Francisco Zoological Society and especially P. Maxwell allowed storage of bird specimens for so long in their freezer. Diann MacRae supplied data from the Pacifica cleaning station; and Mrs. Hubert Fry coordinated the count at Tiburon. N. Story kindly prepared the figure. This is contribution 41 of the Point Reyes Bird Observatory.

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THE JUVENAL PLUMAGE OF KITTLITZ'S MURRELET

Pierre Devillers

On 16 August 1969 Harold Beecher found a presumed juvenile Marbled Murrelet *(Brachyramphus marmoratum)* alive, but in a weakened condition, on the beach at La Jolla, San Diego County, California. Attempts to revive the bird failed and it died the next day. The specimen was donated to the San Diego Natural History Museum (SDNHM No. 37215) and the occurrence was reported in Audubon Field Notes (McCaskie, 1970) as there are very few records of the Marbled Murrelet in southern California. In reexamining the specimen in comparison with juvenile Marbled Murrelets, several points of difference were noted - grayish cast, short bill, whitish tips to secondaries, and whitish rectrices. These points are characteristic of Kittlitz's Murrelet *(Brachyramphus brevirostre).* As there appears to be no description of juvenile *brevirostre* - except for the brief characterization of Kozlova (1957) - the following notes are presented. Capitalized names of colors follow Ridgway (1912).

DESCRIPTION

HEAD AND UPPERPARTS: Forehead, crown, back, and rump – uniform gray (Deep Mouse Gray, tending toward Mouse Gray on upper back, and toward Dark Mouse Gray on back). Feathers at base of bill tinged brown (Chaetura Drab to Fuscous). Upper tail coverts – gray, with a brown (Chaetura Drab) tinge, spotted white. Nape – crossed by broad collar of gray and white in vague bars. Supercilia – which extend back to the nape, white, finely mottled with gray (Mouse Gray). Auriculars – mottled or barred, but more saturated than the surrounding areas, producing the appearance of a cheek patch. Lores – mottled with gray and white, even more saturated than auriculars, passing to solid browner feathering around bill. Black crescentic mark in front of eye.

UNDERPARTS: Lower cheeks, chin, throat, breast, and flanks – white, finely barred and spotted with gray (Mouse Gray); fine spotting on chin; barring more definite and denser on throat and very dense on breast; sides marked with coarser and slightly browner bars; posterior flanks almost devoid of barring.

Belly and undertail coverts – pure white.

TAIL: Rectrices – brown with varying amounts of white; outer rectrix white with two brown (Chaetura Drab) bands at tip, separated by a white subterminal bar; proximal band broaded on next rectrix; white subterminal bar becoming reduced on next rectrices, diminishing to white spots on sides; central rectrices dark with very small spots on either side.

WINGS: Lesser and medium coverts – browner than back (toward Fuscous). Greater coverts – a little grayer than lesser and medium coverts, and with narrow whitish edges. Axillaries – dark brown (Fuscous). Underwing coverts – brown, paler than axillaries. Secondaries – same shade as greater coverts but with pure white tips; inner vane paler than outer vane, and with a narrower white tip. The tips form a conspicuous white bar on the closed wing. Primaries – dark brown (Fuscous).

SOFT PARTS: Bill – black. Feet (in dried skin) – horn colored with black webs.

MEASUREMENTS: Wing – 122.0mm. Tarsus – 15.6mm. Bill – culmen from tip to beginning of feathering – 8.9mm; from tip to distal end of nostril – 7.2mm; lower mandible from gonys to tip – 4.2mm; thickness of upper mandible at distal end of nostril – 2.9mm; thickness of lower mandible at gonys – 1.5mm.

DISCUSSION

The plumage pattern of the *B. brevirostre* specimen is very similar, in general, to that of seven juvenile *B. marmoratum* in the SDNHM collection taken between 6 July and 27 August, five of which still show egg-teeth. There are, however, a number of characters in which Marbled Murrelets differ. The bill is considerably longer, with culmen ranging from 12.3 to 15.8 mm, as opposed to 8.9 mm in the *brevirostre* specimen. The color of the upperparts and of the barring on the underparts is brown instead of gray (a little warmer than Fuscous). The pattern of barring on the underparts is similar, but appears coarser and more extensive on the hind flanks, and less dense on the breast. The auriculars, loral area, and supercilium are solid

brown without white except for a few spots on the auriculars in some specimens. The light collar on the nape is always interrupted in the middle, and is sometimes very reduced. There is no crescentic mark in front of the eye. The tail is solidly brown-black instead of barred with white. The wing coverts and secondaries are solidly brown without white edgings.

This immature differs from adult specimens of *B. brevirostre* in winter plumage by having a much thinner bill, barring or vermiculation on the face, nape, and underparts, and having dark barring in the tail (predominately white in adults). White in the tail and on the secondaries are key characters in which adult Kittlitz's Murrelets differ from adult Marbled Murrelets (Ridgway, 1919; Dement'ev, 1951). Whiter face and nape, shorter bill, and grayness of plumage are supporting characters. Thus there is no doubt as to the identity of the SDNHM specimen.

REMARKS

This appears to constitute the first record for California, and indeed the first record of Kittlitz's Murrelet on the west coast of America, south of Alaska. The species breeds in extreme northeastern Siberia and in Alaska (Kozlova, 1957) and the North American center of abundance is around Glacier Bay near Juneau, in southeastern Alaska (Bent, 1919). Long distance migration is recorded for the Asian coast, with migrants and wintering birds occurring as far as Kamtchatka and the Kuril Islands (Kozlova, 1957). It is not known whether or to what extent American populations also migrate to Asia. Published evidence concerning their status in Alaska during the non-breeding season is contradictory (Dement'ev, 1951; Kozlova, 1957; Gabrielson and Lincoln, 1959).

In any case the mid-August date seems amazingly early for a juvenile to be at such a distance from its breeding grounds, and the possibility of assisted passage immediately comes to mind. Such a possibility can never be disproved, but the obvious inquiries were made to the Scripps Institution of Oceanography, the Coast Guard, and the U. S. Navy, all with negative results. At best, the plausibility of a natural occurrence could be assessed if data were available on breeding biology, parental care, post breeding movements, and dates of arrival on remote wintering grounds. Unfortunately such is not the case (Dement'ev, 1951; Kozlova, 1957), and further speculation on the record is unwarranted in the context of this paper.

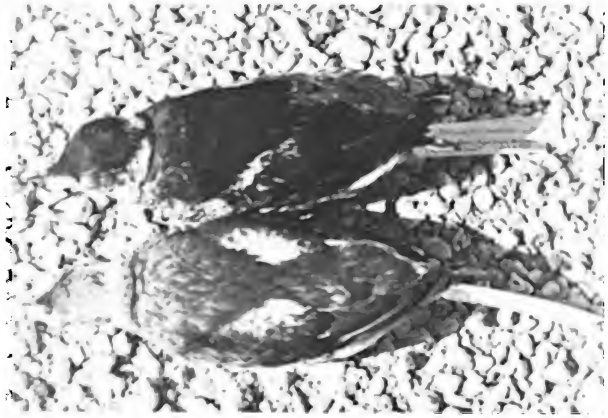
I am indebted to Joseph R. Jehl, Jr. for his assistance in the preparation of the paper. The manuscript also benefitted from the criticisms and comments of Jean T. Craig, Guy McCaskie, and Robert W. Storer.

SUMMARY

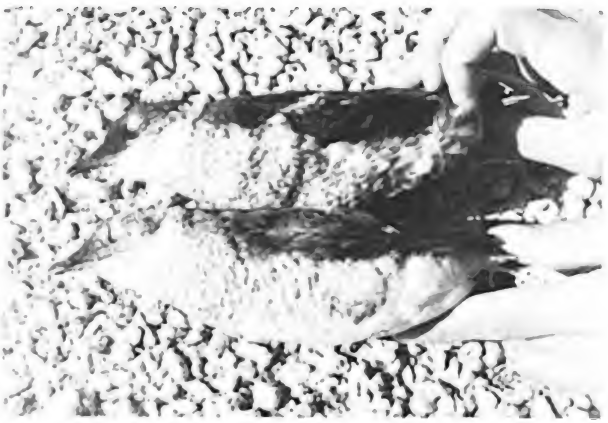
The juvenal plumage of Kittlitz's Murrelet *(Brachyramphus brevirostre)* is described from a specimen in the San Diego Natural History Museum, taken near San Diego on 16 August 1969. The specimen differs from winter adults in having barred nape, underparts and tail, and a thinner bill. From the very similar juvenile Marbled Murrelet *(B. marmoratum)* this bird differs chiefly in the presence of white in the tail and secondaries, whiter face and nape, grayer plumage, and shorter bill. The significance of the record, assisted passage or natural occurrence, is briefly considered but not assessed.

Ventral view of juvenal male Marbled Murrelet *(Brachyramphus marmoratum)* (upper specimen) taken at Puget Sound, Washington on 6 July 1940, and juvenal male Kittlitz's Murrelet *(Brachyramphus brevirostre)* (lower specimen) captured near San Diego, California on 16 August 1969.

Photo by Pierre Devillers



Dorsal and lateral views of juvenal male Marbled Murrelet *(Brachyramphus marmoratum)* (upper specimen in both photos) taken at Puget Sound, Washington on 6 July 1940, and juvenal male Kittlitz's Murrelet *(Brachyramphus brevirostre)* (lower specimen in both photos) captured near San Diego, California on 16 August 1969. Note the whiter face and nape, grayer plumage, and shorter bill of the Kittlitz's Murrelet. *Photos by Pierre Devillers*



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CURRENT BREEDING STATUS OF THE YELLOW-HEADED BLACKBIRD IN CALIFORNIA

Frederick T. Crase and Richard W. DeHaven

While surveying the breeding distribution and abundance of Tricolored Blackbirds *(Agelaius tricolor)* in California during the spring of 1971, we also recorded observations on Yellow-headed Blackbirds *(Xanthocephalus xanthocephalus)*. These observations are reported here and compared with published information on the historical breeding status of Yellow-headed Blackbirds in California.

Regions containing potential breeding habitat for blackbirds were identified from topographic maps and systematically searched during the breeding season. Over 8,000 miles were driven within California between 23 April and 10 June. The survey was conducted at the peak of the blackbird breeding season in each region, beginning in southern California and proceeding northward as the season progressed. Three areas of the state were not surveyed: the Mojave and Sonoran deserts, the coastal mountains north from Bodega Bay, and the Sierra Nevada Mountains. Although we could not achieve a complete count of breeding birds, we did obtain an overall picture of breeding abundance that can serve as a basis for future comparisons.

We found Yellow-headed Blackbirds breeding at 27 locations in the surveyed regions (Table 1). Colony size ranged from as few as five adults to as many as 500. The Salton Sea region contained the largest numbers and had the two largest colonies found during the survey. Compared with other blackbird species in California, Yellow-headed Blackbirds were not found breeding in large numbers. We found fewer than 2,000 adults, less than 800 of which were in the Central Valley. Only five of the 27 colonies (19%) contained more than 100 adults. In contrast, during the same survey we located approximately 200,000 breeding Tricolored Blackbirds.

In addition to the birds located during the survey, a roost of about 5,000 Yellow-headed Blackbirds (adults and immatures) became established on the Gray Lodge Wildlife Management Area near Gridley, Butte County, in early August and remained until early October. It is possible that these birds were not breeders but early migrants, since Bent (1958) has shown that southward migration of this species begins in July.

It appears that the abundance of Yellow-headed Blackbirds in California has not changed greatly during recent years. During the

first half of this century, Grinnell (1915) and Grinnell and Miller (1944) described the species as common in the eastern plateau region and Sacramento-San Joaquin basin, and as less common and local elsewhere in the state. On the basis of our data, this general description could still be used for breeding Yellow-headed Blackbirds in California today. In addition, many of the breeding localities

Table 1. Locations of breeding colonies of Yellow-headed Blackbirds in California during the spring of 1971.

Colony	County	Estimated No. of Breeding Adults	Location
Coachella Valley	Riverside	300	5 mi S Coachella
Ramer Lake	Imperial	500+	Ramer Unit of Imperial Wildlife Area
Del Sur	Los Angeles	10	1 mi NE Del Sur
Topaz Lake	Mono	10	3 mi E Topaz
Bridgeport	Mono	5	1 mi W Bridgeport
Mettler Ranch	Kern	5	20 mi S Bakersfield
Lakeview #1	Kern	30	1 mi W Lakeview
Lakeview #2	Kern	50	2 mi NW Lakeview
Shafter	Kern	75	19 mi W Shafter
Wasco	Kern	120	4 mi W Wasco
Mendota	Fresno	100+	2 mi S Mendota
Firebaugh	Fresno	5	1 mi S Firebaugh
Los Banos	Merced	30	2 mi NE Los Banos
Santa Fe Grade	Merced	15	8 mi N Los Banos
Gustine	Merced	5	2 mi SE Gustine
Sacramento	Sacramento	5	1 mi W Sacramento
Folsom	Sacramento	75	5 mi S Folsom
Woodland Sugar Ponds	Yolo	60	1 mi W Woodland
Clear Lake	Lake	100+	S edge Clear Lake
Colusa	Colusa	10	5 mi W Colusa
Sierraville	Sierra	30	2 mi SW Sierraville
Lincoln	Placer	10	1 mi W Lincoln
Honey Lake	Lassen	10	N corner Honey Lake
Madeline	Lassen	25	1 mi S Madeline
Modoc N.W.R.	Modoc	25	3 mi S Alturas
Tule Lake N.W.R.	Siskiyou	10	S corner Tule Lake
Grass Lake	Siskiyou	40	20 mi NE Weed

reported by Grinnell and Miller (1944) coincide with areas where we found active colonies. More recently, an average of two breeding adults per route were observed in California during the 1968 breeding bird survey (Robbins and Van Velzen, 1969). This compares with three per route for Nevada and two per route for Oregon.

Occasionally, large flocks of Yellow-headed Blackbirds are reported in California during winter and spring months (Audubon Field Notes, 25(3), 24(3), 21(3), and others). In 1971 we also observed several flocks of 1,000-2,000 birds in the Sacramento and San Joaquin Valleys during April and early May. These flocks contained either almost all adult males, or almost all females and immature males. If movement data shown by Royall et al. (1971) are applicable to California, it is probable that these large flocks are migrants in transit from southern wintering grounds to more northerly breeding areas.

We thank Edward S. Smith, California Department of Fish and Game, and Jack Wilburn, Sacramento State College, for reporting breeding locations.

APPENDIX

In addition to the data presented here, the following additional Yellow-headed Blackbird breeding colonies were noted during the 1972 breeding season.

Colony	County	Estimated No. of breeding Adults	Location
Honey Lake	Lassen	20	4 mi SE Standish
Susanville	Lassen	60	6 mi E Susanville
Eagle Lake	Lassen	150	E side Eagle Lake
Merrillville	Lassen	10	20 mi N Susanville
Angle Road	Sacramento	12	2 mi ENE Herald

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NOTES

NEW ARIZONA BIRD RECORDS

Collections of birds in Arizona, since the publication of Phillips et al. (1964), The Birds of Arizona), have provided several records of species heretofore unknown or of rare occurrence in the state. Enough of these are now available to warrant publication. Four species reported here have not previously been collected in Arizona.

All citations on status and previous specimens from Arizona are based on Phillips et al. (op. cit.) unless otherwise noted. Specimens are on deposit in the bird collection at the University of Arizona.

Black Brant *(Branta nigricans).* The first specimen from the state (UA 10313, wing only) was shot and photographed (photo at University of Arizona) by a hunter at Mittry Lake, approximately 12 miles NE of Yuma, Yuma Co. on 23 December 1970. Previous sight records were reported by Phillips et al. (op. cit.) and Monson (1968, Jour. Ariz. Acad. Sci. 5:34-35).

White-winged Scoter *(Melenitta deglandi).* A female (ovary 9 x 21, 1366.5 g, moderate fat, UA 9919) was collected by Smith on 27 October 1969, NW of Tucson, Pima County at Ruthrauff Road Sewage Ponds. There is but one previous specimen for the state.

Red Phalarope *(Phalaropus fulicarius).* One additional specimen from about 30 miles SE of Tucson, Pima County on 19 October 1970 (male, 1.t. 1 x 3, light fat, UA 10246). Speich and others saw one 4 mi. N. of Nogales, Santa Cruz County on 17 October 1971.

Common Tern *(Sterna hirundo).* Two additional specimens from Ina Road Sewage Pond, NW of Tucson, Pima County on 4 September 1965 (after storm, male, tes. 2 x 1, no fat, UA 6375) and 4 October 1968 (female, ovary 8 x 4, 67.4 g, light fat, UA 9549). Two were seen near Nogales, Santa Cruz County on 17 October 1971 by Speich and others.

Nothern Shrike *(Lanius excubitor).* An unsexed individual (moderate fat, 61.8 g, skull pneumatic, UA 8452) was collected by R. D. Ohmart, 8 mi. NE of Flagstaff, Coconino Co., on 26 February 1967. There are four previous specimens (all nothern Arizona, Nov. - Feb.) for the state.

Black-and-White Warbler *(Mniotilta varia).* A male (skull pneumatic, light fat, UA 9544) was taken 6 mi. SW of Clifton along the Gila River, Greenlee Co., on 3 April 1969. This is the fourth Arizona specimen away from the Tucson area and only the second for the spring migration period.

Prothonotary Warbler *(Protonotaria citrea).* An immature female (ovary 2 x 2, skull not completely pneumatic, very heavy fat, 13.9 g, UA 8999) was taken from a mist net by S. M. Russell at Tucson, Pima County (12.5 mi. N of Speedway on Silverbell Road), on 21 October 1967. There are two previous Arizona specimens.

Golden-winged Warbler *(Vermivora chrysoptera).* The first record for the state is a male (testes 1 x 1, skull not completely pneumatic, 7.5 g, no fat, UA 9371) from Quitobaquito Springs, Organ Pipe National Monument, Pima County, on 3 November 1968.

Parula Warbler *(Parula americana).* This species is rare in fall and winter in southern Arizona. An unsexed bird (skull pneumatic, 7.7 g, UA 9001) was taken in Upper Sabino Canyon, Santa Catalina Mountains, Pima Co., on 25

April 1967. There are but three previous spring records. An additional fall record is a bird banded by B. Harrison at Nogales, Santa Cruz Co., on 7 November 1971.

Black-throated Blue Warbler *(Dendroica caerulescens).* There are two previous specimens of this species from Arizona. An immature (unsexed, 9 g, skull partly pneumatic, UA 7524) was taken at Aravaipa Creek, Pinal County, on 23 October 1965.

Chesnut-sided Warbler *(Dendroica pensylvanica).* Two additional specimens: 23 September 1967, near Tucson, Pima Co., (male, l.t. 0.5 x 0.5, skull not pneumatic, 9.2 g, UA 9000) taken from a mist net by Russell and 22 December 1970, 5.5 mi. N, 2.3 mi. E of Nogales, Santa Cruz Co. (female?, skull pneumatic, not fat, UA 10315). There are three previous records in late fall and early winter.

Blackpoll Warbler *(Dendroica striata).* There are no previous Arizona records. Russell found a freshly dead female (largest ovum 0.5 mm, skull pneumatic, little fat, 10.0 g, UA 9536) at Jose Juan Tank, Cabeza Prieta Game Range, Pima Co., on 14 June 1968. This is one of the few spring records for western United States (McCaskie, 1970, Calif. Birds 1:95-104). A second specimen was taken from a mist net by Speich on 18 September 1971 (female, ovary minute, skull not pneumatic, light fat, UA 10314) 4 mi. SSW of Red Rock, Pima County.

Palm Warbler *(Dendroica palmarum).* The second specimen for the state is a female (ovary 1 x 3, skull pneumatic, extensive fat, 9.6 g, UA 9903) taken by Russell NW of Tucson, Pima County on 8 November 1969. The first specimen was from Maricopa Co. (Monson, op. cit.).

Northern Waternthrush *(Seiurus noveboracensis).* A female (ad. ovary 4 x 1, light fat, skull pneumatic, 17.5 g, UA 5553) was taken by Ohmart at Sabino Lake, Sabino Canyon, Santa Catalina Mountains, Pima Co., 2720 feet, on 4 December 1965. It represents the first winter record for the state. Five birds have been banded in the Tucson area: 11 May 1968 (18.7 g), 15 May 1971 (18.3 g), 17 May 1969 (16.2 g), 30 August 1968 (19.5 g) and 18 September 1971 (20.5 g).

Ovenbird *(Seiurus aurocapillus).* A male (l.t. 5 x 7, r.t. 6 x 6, light fat, skull pneumatic, UA 9221) was collected by Smith in pine-oak woodland, 1.5 mi. SE of Pinal Peak on Pioneer Pass Trail, 7000 feet, Pinal Mountains, Gila Co., on 17 June 1968. There are no previous Arizona specimens and the species is listed as hypothetical on the basis of a sight record. *George T. Austin, E. Linwood Smith and Steve Speich, Department of Biological Sciences, University of Arizona, Tucson, Arizona 85721* (present address of first author: *Department of Biological Sciences, University of Nevada, Las Vegas 89109.*

A WINTER RECORD FOR THE ROUGH-WINGED SWALLOW IN MONTEREY COUNTY, CALIFORNIA

On 9 January 1972, while studying a concentration of shorebirds at the mouth of the Salinas River, Monterey County, my attention was attracted by a flock of approximately 30 swallows feeding over the water well offshore. At first glance these appeared to be Tree Swallows *(Iridoprocne bicolor)* and Violet-green Swallows *(Tachycineta thalassina)* in equal number, but as I watched them, a Rough-winged Swallow *(Stelgidopteryx rulficollis)* suddenly appeared. In characteristic fashion it enabled me to watch it, approaching within 50 feet of me, then temporarily going out of sight as it mingled with the other swallows, only to reappear again from the middle of the river. Under these circumstances there was no question as to its identity, but had it been possible I would have collected it in order to determine the race. I spent the better part of an hour hoping it would feed, even briefly, over the marsh in which I was standing, but it never did.

This is apparently the first actual record of the occurrence of this species in central California during the winter months. It has been noted at San Diego on 27 January (The Distribution of the Birds of California, Grinnell and Miller, 1944), but this is generally considered to represent a rather early record for the spring migration. The race *(psammochrous)* breeding in southern California is one of the earliest spring migrants to appear, so an occasional individual in late January is to be expected. *Thomas D. Burleigh, 1242 Sylvan Road, Monterey, California.*